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Attorney's Docket No.: 09712-055001 / Z-200

Amendments to the Drawings:

The attached 2 sheets of drawings include new Figs. 5 and 6.

REMARKS

Claims 1-10, 12-38, 40-57 and, upon entry of this amendment new claims 58-64, are pending. Claims 1, 24, 26, 27-29, 53, and 55-57 have been amended. Claims 11 and 39 have been canceled without prejudice.

The drawings were objected to under 37 C.F.R. § 1.83(a). The Office Action states that “the reflective elements and the diffractive elements of claims 14, 15, 41, and 42 must be shown or the features(s) canceled from the claims.”¹ New Fig. 5 illustrates an embodiment of the present invention in which the lenslet array comprises an array of elements each providing focusing power through diffraction. New Fig. 6 illustrates a previously enclosed embodiment of the present invention in which a lenslet array comprises an array of elements each providing focusing power through reflection.

Claims 1-8, 13, 14, 16, 17, and 20-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 6,392,752 to Johnson (“Johnson 752”) in view of U.S. patent no. 6,628,370 to McCullough et al. (“McCullough”).

Claim 1, as amended herein, recites:

[a]n interferometry method comprising:
directing a measurement beam to contact a measurement surface and a reference beam to contact a reference surface, wherein the measurement and reference beams are derived from a common source;
imaging, with a magnification of less than 1, light reflected from the measurement surface onto a multi-element detector through an optical system comprising a lenslet array; and
imaging light reflected from the reference surface onto the multi-element detector to interfere with the light reflected from the measurement surface.

Applicant submits that no combination of Johnson ‘752 and McCullough discloses or suggests the interferometry method of claim 1, which comprises imaging, with a magnification

¹ Office Action, at page 2.

of less than 1, light reflected from the measurement surface onto a multi-element detector through an optical system comprising a lenslet array.

Claim 12 was rejected as being unpatentable under 35 U.S.C. § 103(a) over Johnson '752 and McCullough in further view U.S. patent no. 5,133,601 to Cohen et al. ("Cohen").

Claim 12 depends from claim 1. Cohen, whether taken alone or in combination with Johnson '752 and McCullough, neither discloses nor suggests the interferometry method of claim 1. It is submitted that dependent claim 12 is allowable for at least this reason.

Claim 15 was rejected as being unpatentable over Johnson '752 and McCullough in further view of U.S. patent no. 6,133,986 to Johnson ("Johnson '986").

Claim 15 depends from claim 1. It is submitted that no combination of Johnson '752, McCullough, and Johnson '986 discloses or suggests the interferometry method of claim 1. Accordingly, dependent claim 15 is submitted to be patentable for at least this reason.

Claims 18 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752 and McCullough in further view of U.S. patent no. 6,493,093 to Harasaki ("Harasaki").

Claims 18 and 19 depend from claim 1. It is submitted that no combination of Johnson '752, McCullough, and Harasaki discloses or suggests the interferometry method of claim 1. Accordingly, dependent claims 18 and 19 are submitted to be patentable for at least this reason.

Claims 24 and 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752.

As amended herein, claim 24 recites:

[a]n interferometry method comprising:
 preparing, from a common source, an array of sub-beams;
 relaying, using at least one focusing element, the plurality
of sub-beams to a beam splitter to provide a plurality of
measurement and reference beams derived from the common
source;
 directing the measurement beams to contact a measurement
surface as an array of focused spots and directing the reference
beams to contact a reference surface;
 imaging light reflected from the measurement surface onto
a multi-element detector; and

imaging light reflected from the reference surface onto the multi-element detector to interfere with the light reflected from the measurement surface.

Applicant submits that Johnson '752 neither discloses nor suggests the interferometry method of claim 24, which comprises relaying, using at least one focusing element, the plurality of sub-beams to a beam splitter to provide a plurality of measurement and reference beams derived from the common source.

Claim 25 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752 in view of Cohen.

Claim 25 depends from claim 24. No combination of Johnson '752 and Cohen discloses or suggests the interferometry method of claim 24. Accordingly, dependent claim 25 is submitted to be patentable for at least this reason.

Claim 26 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752 in view of McCullough.

Claim 26 depends from claim 24. No combination of Johnson '752 and McCullough discloses or suggests the interferometry method of claim 24. Accordingly, dependent claim 26 is submitted to be patentable for at least this reason.

Claims 29-36, 40, 41, 43, 44, and 47-51 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752 in view of McCullough.

Claim 29, as amended herein, recites:

[a]n interferometry system for profiling a measurement surface, the system comprising:

- a multi-element detector; and
- an interferometer which during operation directs a measurement beam to contact the measurement surface and a reference beam to contact a reference surface, and images light reflected from the measurement surface to overlap on the multi-element detector with light reflected from the reference surface, wherein the measurement and reference beams are derived from a common light source and wherein the interferometer includes an optical system comprising a lenslet array to image the light reflected from the measurement surface onto the detector, wherein

the optical system is configured to demagnify the light reflected from the measurement object onto the detector.

It is submitted that no combination of Johnson '752 and McCullough discloses or suggests the interferometry system of claim 29, which comprises an optical system is configured to demagnify the light reflected from the measurement object onto the detector.

Claim 43 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752 and McCullough in view of Johnson '986.

Claim 43 depends from claim 29. It is submitted that no combination of Johnson '752, McCullough, and Johnson '986 discloses or suggests the interferometry system of claim 29. Accordingly, dependent claim 43 is submitted to be patentable for at least this reason.

Claims 45 and 46 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752 and McCullough in view of Harasaki.

Claims 45 and 46 depend from claim 29. It is submitted that no combination of Johnson '752, McCullough, and Harasaki discloses or suggests the interferometry system of claim 29. Accordingly, dependent claims 45 and 46 are submitted to be patentable for at least this reason.

Claim 53 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752 in view of McCullough.

Claim 53, as amended herein, recites:

[a]n interferometry system for profiling a measurement surface, the system comprising:

a multi-element detector; and

an interferometer which during operation directs a measurement beam to contact the measurement surface and a reference beam to contact a reference surface, and images light reflected from the measurement surface to overlap on the multi-element detector with light reflected from the reference surface, wherein the measurement and reference beams are derived from a common source and wherein the interferometer includes an optical system comprising a lenslet array and an optical relay positioned along an optical path intermediate the measurement surface and the lenslet array to direct the measurement beam to contact the measurement surface as an array of focused spots, the optical relay comprising at least one lens.

Applicant submits that no combination of Johnson '752 and McCullough discloses or suggests the interferometry system of claim 53, which comprises an optical system comprising a lenslet array and an optical relay positioned along an optical path intermediate the measurement surface and the lenslet array to direct the measurement beam to contact the measurement surface as an array of focused spots, the optical relay comprising at least one lens.

Claims 56 and 57 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson '752.

Claim 56, as amended herein, recites:

[a]n interferometric system comprising:
an interferometer configured to receive a light beam from a light source and generate an optical interference pattern; and
a lens system including a numerical aperture converter and at least one focusing element, the lens system configured to transmit the light beam from the light source to the interferometer, the numerical aperture converter of the lens system configured to receive the optical interference pattern and form a virtual image thereof, the at least one focusing element configured to image the virtual image of the optical interference pattern onto a detector, wherein the numerical aperture converter matches an objective numerical aperture of the lens system for illuminating the interferometer to an image numerical aperture of the lens system for imaging the optical interference onto the detector.

Claim 57, as amended herein, recites:

[a] method for profiling the surface of an object with an interferometric system, the method comprising:
transmitting a light beam from a light source to an interferometer through a lens system; and
receiving an optical interference pattern produced by the interferometer and forming a virtual image of the optical interference pattern; and
imaging the virtual image of the optical interference pattern onto a detector via the lens system, wherein the lens system includes a numerical aperture converter which matches an objective numerical aperture of the lens system for illuminating the interferometer to an image numerical aperture of the lens system for imaging the optical interference onto the detector

Claims 56 and 57 refer to a virtual image of an optical interference pattern. Claim 56 recites an interferometric optical system comprising at least one focusing element configured to image the virtual image of the optical interference pattern onto a detector. Claim 57 recites imaging the virtual image of the optical interference pattern onto a detector via a lens system. It is submitted that no combination of the cited references discloses or suggests the interferometric system of claim 56 or the method of claim 57.

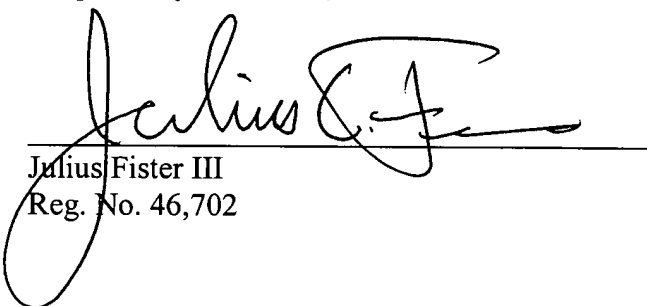
It is believed that the rejections in the Office Action have been overcome for at least the reasons presented herein. Furthermore, it is submitted that no combination of the cited art discloses or suggests the respective inventions of new independent claims 58, 61, and 63. Thus, the claims as presented and amended herein are submitted to be in condition for allowance.

If the Examiner wishes to discuss this case, then Applicants respectfully request a personal or telephonic interview to discuss any remaining issues and expedite the allowance of the application

Enclosed is a \$434 check for excess claim fees. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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